
XXVII. *Some Observations on the Bill of the Toucan ; in a Letter to the Right Hon. Sir Joseph Banks, Bart. K.B. P.R.S. H.M.L.S. By Thomas Stewart Traill, M.D.*

Read March 15, 1814.

SIR,

YOUR polite attention to me on former occasions emboldens me to trouble you with the following observations on the bill of the Toucan.

All systematic authors have described the bill of the genus *Ramphastos* as *hollow*. The Linnæan character even begins, "*Rostrum maximum inane,*" &c.; and Buffon has eloquently enlarged on the supposed error, or oversight of Nature, in furnishing so small a bird with a bill so monstrous and useless. My friend Charles Waterton, Esq., who has lately returned from the interior of Guyana, had observed, that when a portion of the bill of a Toucan is shot away, the remainder bleeds profusely; and on immersing the bill of a recently killed bird in hot water, he was enabled to detach from the exterior covering of the bill a horny substance, which filled its whole cavity, consisting of a delicate net-work of bony matter in the interior, surrounded by thin plates of the same material. On these bony partitions a great number of blood-vessels are distinctly ramified in the living animal. This gentleman favoured me with a specimen thus prepared; in carefully examining which, I found that the nostrils conducted to the internal cells of the substance within the upper mandible.

mandible. From this observation, and the great vascularity of the part, I concluded that the bill is *not* an useless incumbrance, as Buffon rashly conjectured; but that it is an admirable contrivance of nature to increase the delicacy of the organ of smell, in a species whose residence and habits require great nicety in that sense. As the animal is incapable of either tearing or bruising its food, it necessarily must feed on small substances. Its aliment is said chiefly to consist of small fruits or seeds; and for readily attaining these in the wilds of almost impenetrable forests, an acute organ of smell is no doubt requisite. Instead, then, of regarding the bill of the Toucan as an useless load, I am disposed to consider it as an instance of that wisdom and contrivance which attentive observation every where discovers in the works of nature.

I am, Sir,

With the highest esteem and respect, &c.

Liverpool,
January 21, 1814.

THOS. STEWART TRAILL.